

ABSTRACT

A high intensity discharge lamp constructed with a tubular envelope composed of single crystal sapphire in which a continuous non-flash arc is created across multiple electrodes to generate a radiation emitting plasma. The lamp may operate at higher temperatures and pressures than conventional high intensity discharge lamps to produce greater luminance at any given power input. The lamp fill may be chosen from a wide range of gases and additives to produce the desired light spectra in the range from ultraviolet through near infra-red. The effective life of the lamp may be significantly extended. The lamp may be utilized particular benefits in image projection where a small powerful light source is required to optically match increasingly smaller image generation devices. In particular, the lamp may maintain a pre-selected correlated color temperature from 4,000 to 9,000⁰ K over the life of the lamp. Alternatively, the lamp may be operated without electrodes utilizing microwave or radio frequency radiation as a power source.